

International
IR Rectifier

SERIES
45L(R), 150K/ KS(R)

STANDARD RECOVERY DIODES

Stud Version

Features

- Alloy diode
- High current carrying capability
- High surge current capabilities
- Stud cathode and stud anode version

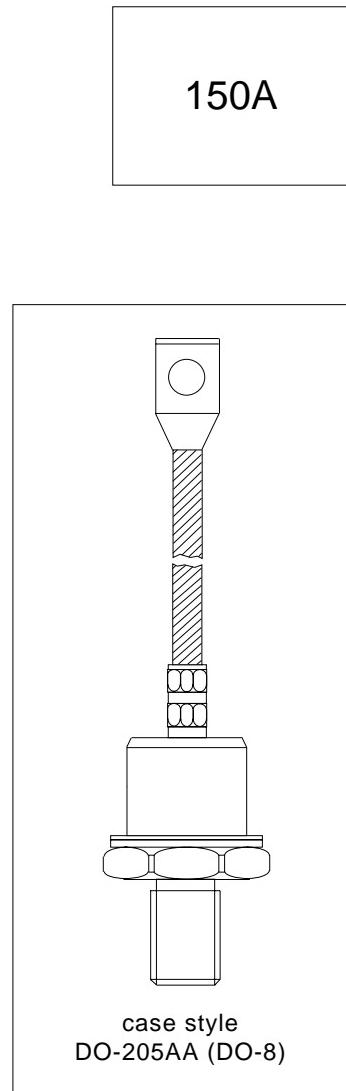
150A

Typical Applications

- Battery charges
- Welders
- Machine tool controls
- High power drives
- Medium traction applications
- Freewheeling diodes

Major Ratings and Characteristics

Parameters	45L /150K	Units
$I_{F(AV)}$	150	A
@ T_c	150	°C
$I_{F(RMS)}$	235	A
I_{FSM}	3570	A
@ 50Hz	3570	A
@ 60Hz	3740	A
I^2t	64	KA ² s
@ 50Hz	64	KA ² s
@ 60Hz	58	KA ² s
V_{RRM} range	100 to 600	V
T_J	- 40 to 200	°C



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ELECTRICAL SPECIFICATIONS

Voltage Ratings

Type number	Voltage Code	V_{RRM} , maximum repetitive peak reverse voltage V	V_{RSM} , maximum non-repetitive peak rev. voltage V	I_{RRM} max. @ $T_J = 175^\circ\text{C}$ mA
45L(R) 150K(R) 150KS(R)	10	100	200	35
	20	200	300	
	30	300	400	
	40	400	500	
	60	600	720	

Forward Conduction

Parameter	45L /150K	Units	Conditions					
$I_{F(AV)}$ @ Case temperature	150	A	180° conduction, half sine wave					
	150	°C						
$I_{F(RMS)}$	235	A	DC @ 142°C case temperature					
I_{FSM} Max. peak, one-cycle forward, non-repetitive surge current	3570	A	$t = 10\text{ms}$	No voltage reapplied	Sinusoidal half wave, Initial $T_J = T_J$ max.			
	3740		$t = 8.3\text{ms}$					
	3000		$t = 10\text{ms}$	100% V_{RRM} reapplied				
	3140		$t = 8.3\text{ms}$					
I^2t Maximum I^2t for fusing	64	KA ² s	$t = 10\text{ms}$	No voltage reapplied	Initial $T_J = T_J$ max.			
	58		$t = 8.3\text{ms}$					
	45		$t = 10\text{ms}$	100% V_{RRM} reapplied				
	41		$t = 8.3\text{ms}$					
$I^2\sqrt{t}$	640	KA ² /s	$t = 0.1$ to 10ms , no voltage reapplied					
$V_{F(TO)1}$ Low level value of threshold voltage	0.67	V	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_J$ max.					
$V_{F(TO)2}$ High level value of threshold voltage	0.83		$(I > \pi \times I_{F(AV)})$, $T_J = T_J$ max.					
r_{f1} Low level value of forward slope resistance	1.42	mΩ	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_J$ max.					
r_{f2} High level value of forward slope resistance	0.91		$(I > \pi \times I_{F(AV)})$, $T_J = T_J$ max.					
V_{FM}	1.33	V	$I_{pk} = 471\text{A}$, $T_J = 25^\circ\text{C}$, $t_p = 10\text{ms}$ sinusoidal wave					

Thermal and Mechanical Specifications

Parameter	45L /150K		Units	Conditions
T _J	Max. junction operating temperature range	-40 to 200	°C	
T _{stg}	Max. storage temperature range	-40 to 200		
R _{thJC}	Max. thermal resistance, junction to case	0.25	K/W	DC operation
R _{thCS}	Max. thermal resistance, case to heatsink	0.10		Mounting surface, smooth, flat and greased
T	Mounting torque	Min.	Nm (lbf-in)	Not lubricated threads
45L		14.1 (125)		
		17.0 (150)		Lubricated threads
		Min. 12.2 (108)		
		Max. 15.0 (132)		
150K		Min. 11.3 (100)	Nm (lbf-in)	Not lubricated threads
150KS		Max. 14.1 (125)		
		Min. 9.5 (85)		Lubricated threads
		Max. 12.5 (110)		
wt	Approximate weight	100 (3.5)	g (oz)	
	45L	DO-205AC (DO-30)	See Outline Table	
Case style	150K-A	DO-205AA (DO-8)		
	150KS	B-42		

ΔR_{thJC} Conduction

(The following table shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC)

Conduction angle	Sinusoidal conduction	Rectangular conduction	Units	Conditions
180°	0.031	0.023	K/W	$T_J = T_{J \text{ max.}}$
120°	0.038	0.040		
90°	0.048	0.053		
60°	0.071	0.075		
30°	0.120	0.121		

Ordering Information Table

Device Code		45	L	R	60
1	- 45				= Standard version
2	- L				= Essential Part Number
3	- R				= Stud Reverse Polarity (Anode to Stud) None = Stud Normal Polarity (Cathode to Stud)
4	-	V _{RRM}			Voltage code: Code x 10 = V _{RRM} (See Voltage Ratings table)

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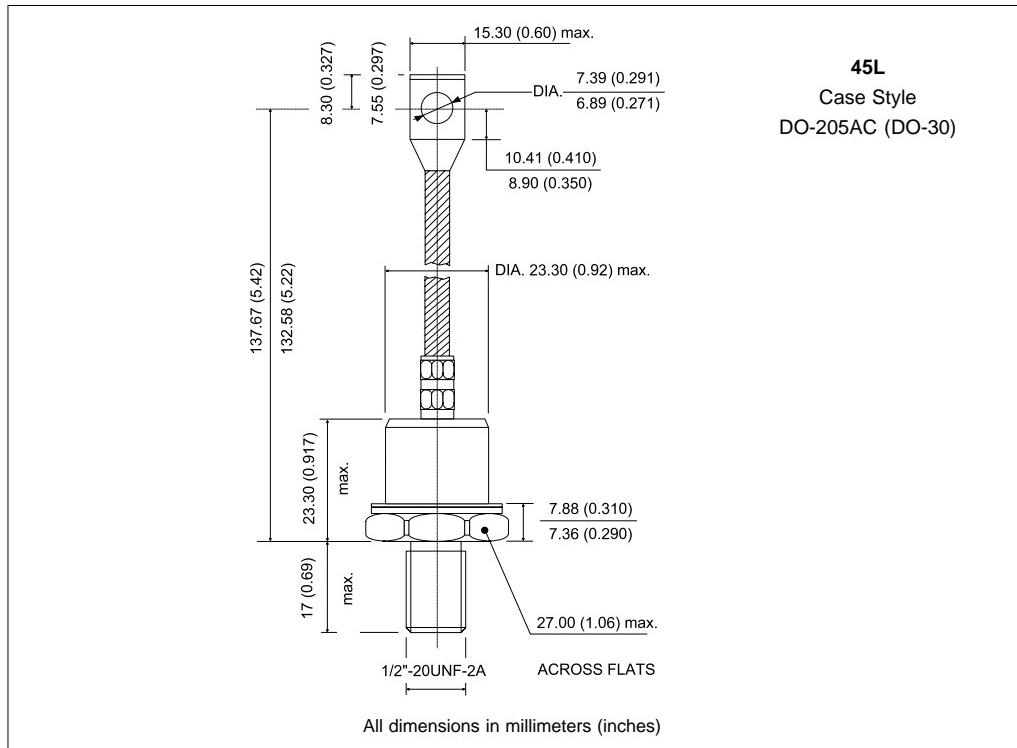
Ordering Information Table

Device Code	
15	0
K	R
60	A
1	2
3	4
5	6

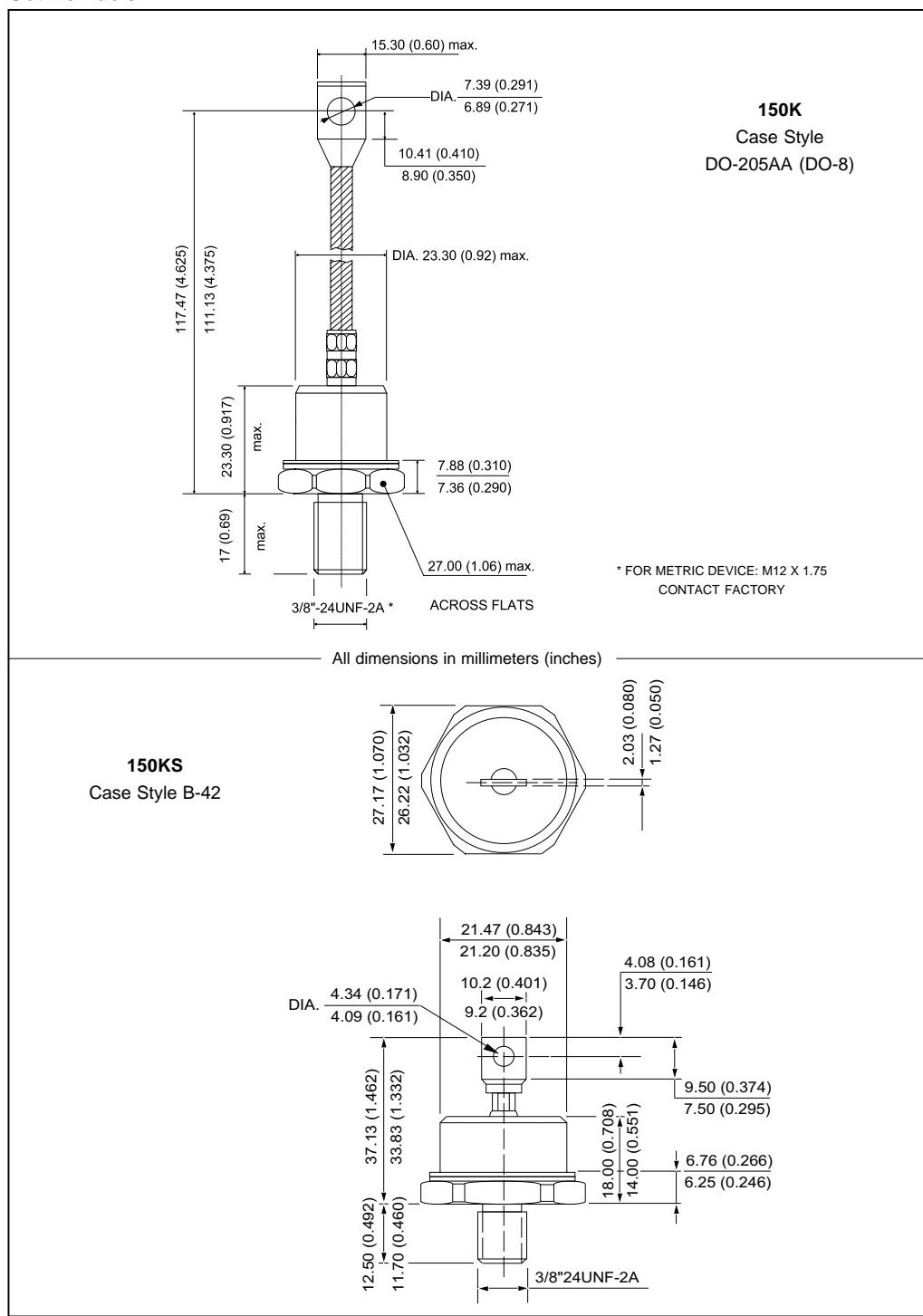
1 - 15 = Essential Part Number
2 - 0 = Standard Device
3 - Case Style
K = DO205AA (DO-8)
KS = B-42
4 - R = Stud Reverse Polarity (Anode to Stud)
None = Stud Normal Polarity (Cathode to Stud)
5 - Voltage code: Code x 10 = V_{RPM} (See Voltage Ratings table)
6 - A = Essential Part Number for 150K (Omitted for 150KS)

NOTE: For Metric Device M12 x 1.75 Contact Factory

Outline Table



Outline Table



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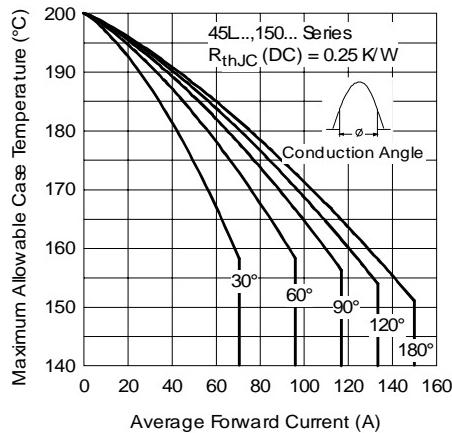


Fig. 1 - Current Ratings Characteristics

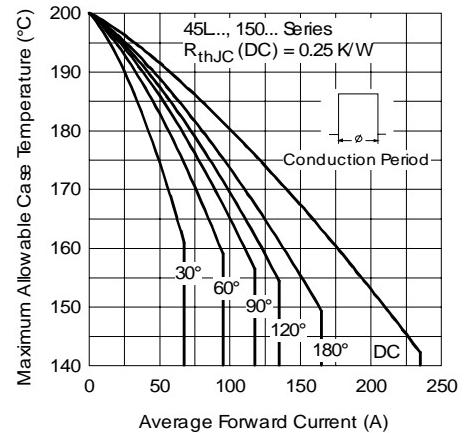


Fig. 2 - Current Ratings Characteristics

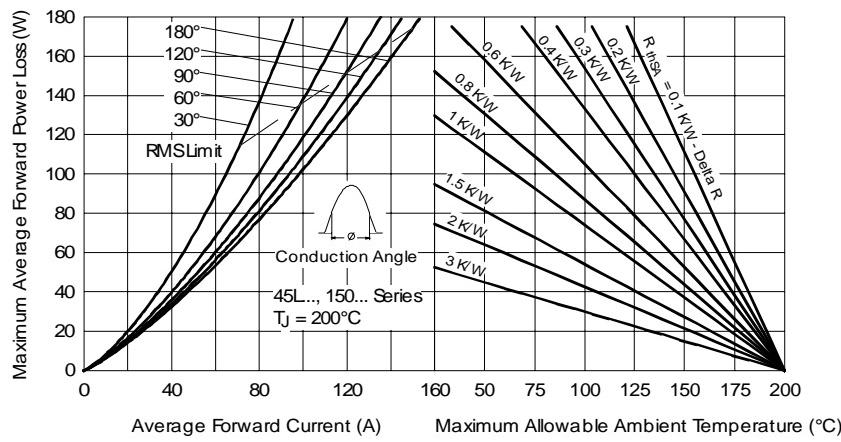


Fig. 3 - Forward Power Loss Characteristics

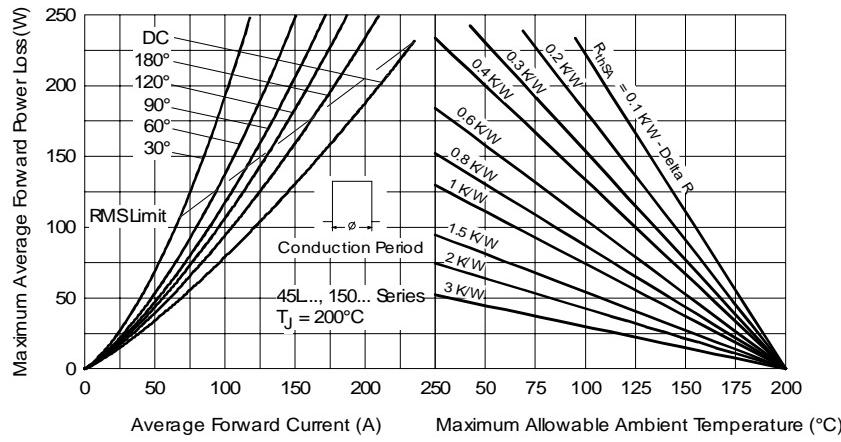


Fig. 4 - Forward Power Loss Characteristics

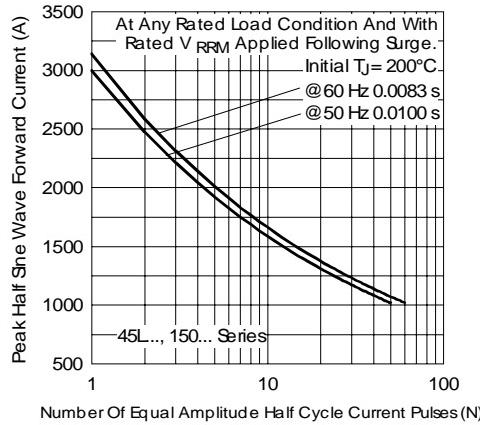


Fig. 5 - Maximum Non-Repetitive Surge Current

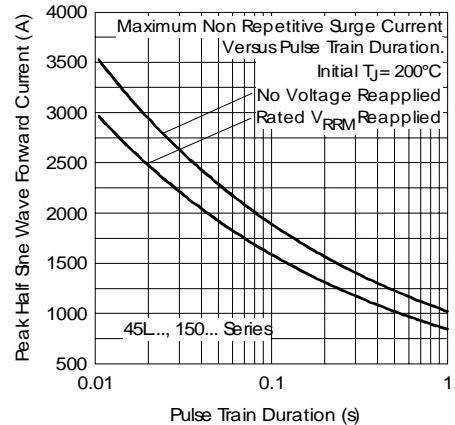


Fig. 6 - Maximum Non-Repetitive Surge Current

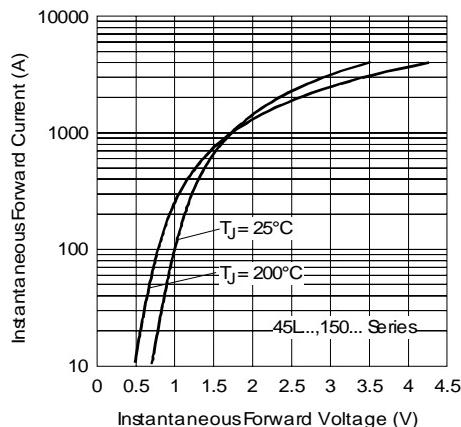


Fig. 7 - Forward Voltage Drop Characteristics

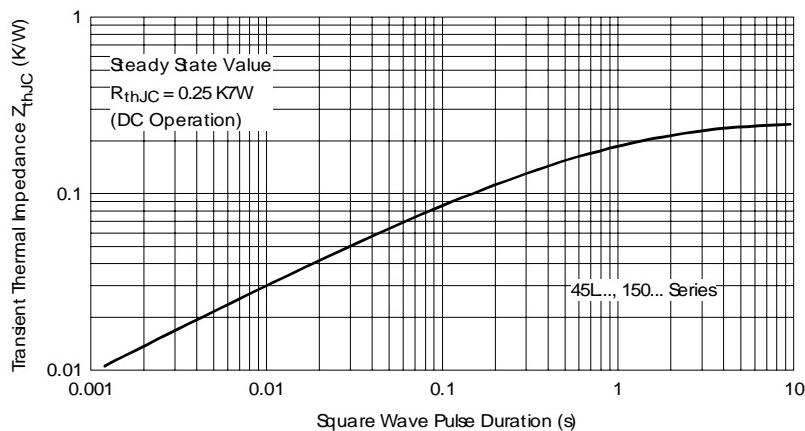


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic

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Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level.
Qualification Standards can be found on IR's Web site.

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